



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

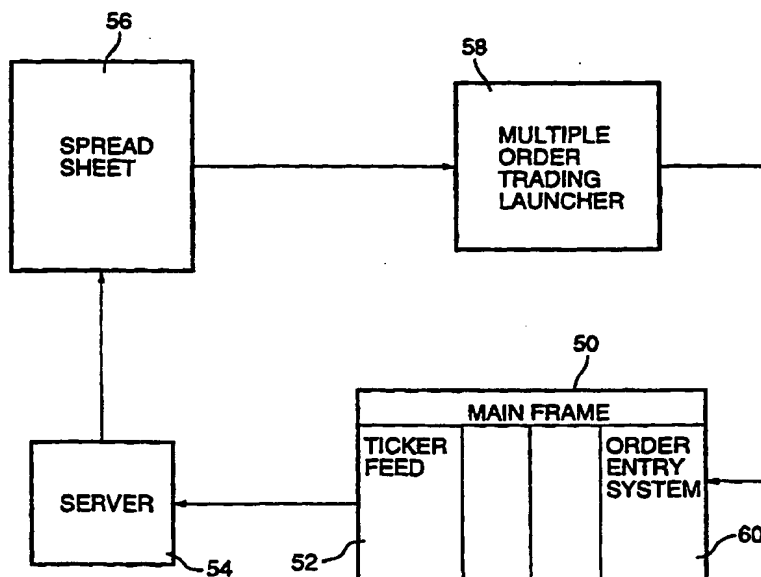
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DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE),
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amendments.*

(54) Title: COMPUTERIZED STOCK EXCHANGE TRADING SYSTEM



(57) Abstract

An improvement in computer automated stock exchange trading whereby a graphic user interface with a mouse and display is used to select parameters such as share symbol, price selection, order size, and transaction type, as well as other indicators to launch a trading order to the order entry system of a stock exchange computer. Further improvements include a programmed interface by which data on a group of shares may be read from a spreadsheet formulated into an order and launched automatically or in response to a signal from an operator so as to trade an index or basket of shares substantially instantaneously.

COMPUTERIZED STOCK EXCHANGE TRADING SYSTEM

This invention relates to automated means for effecting the purchase and sale of shares traded on a stock exchange. More particularly, it relates to computer software and hardware by which an operator may instantaneously effect the transfer of shares of a large number of corporations.

BACKGROUND:

For many years the trading of shares listed on a stock exchange were effected by the activities of people known as traders on the trading floor of a stock exchange, and were confirmed by some form of notation or writing on paper. Once effected, the trades or transfers of shares were formally reported to brokers for the purchasing and selling customers in a formal way with or without the delivery of the share certificates.

individual stock being traded. From the information available at a terminal, the trader/operator would have to input the symbol for the company shares, the price, the exchange, the size of the order, and the instructions to buy, sell, cross
5 or short trade the stock.

It has even become possible to effect trades in certain stocks automatically when they reach a certain price level.

However, modern investment strategies involve
10 the investment in large groups or "basket" of listed shares as part of an entire portfolio which is strategically selected to provide a balance of growth potential, income generation, and risk avoidance. These portfolios are often held by mutual funds, banks, insurance companies, or other institutional
15 investors, and they are frequently being changed to adjust the balance in the factors which effect growth, income and risks.

investment move. Hitherto, this has been done by a trader/operator keying in the necessary trades in each individual stock through a computer terminal. Where the portfolio includes a list of 100 stocks, for example, this is a lengthy process and in fact the problem arises that the prices of many shares would change during the time it takes to key in the various orders, and the original conditions necessary to satisfy the requirements of the particular trade may no longer be present.

10 **SUMMARY OF THE INVENTION:**

It is therefore the purpose of the present invention to provide an automated, computerized trading system in which multiple share order entries can be executed automatically within seconds by the trader/operator in activating a few entries on a keyboard. This method of

By means of the system programmed in accordance with the present invention, a conventional terminal or personal computer capable of communication with a stock exchange central computer can be adapted to read, process, and react to information from the stock exchange, and/or commands of the operator and automatically and quickly perform multiple trades in a manner described above.

DESCRIPTION OF THE PREFERRED EMBODIMENT:

The invention may be better understood by a description of one embodiment with reference to the attached drawings in which:

Figure 1 is a schematic illustration of a mainframe stock exchange computer to which a series of terminals or personal computers are connected each comprising a display screen and keyboard;

Since the advent of computerized trading, these mainframe
central computers are connected to a variety of terminals,
such as 4, in various trading offices of brokerage houses
through the city and abroad. By means of the individual
5 terminals, traders may review data on the display screen
8 and input the necessary information and instructions on
the keyboard 6 whereby a given volume of a particular stock
is bought or sold (or crossed or shorted) in a manner which
is the automated equivalent of an individual transaction
10 on the trading floor.

Such a network is referred to, in the case of
the Toronto Stock Exchange, as "CATS" which is an
abbreviation for "Computer Aided Trading System", and similar
systems are now commonly used and operated by many stock
15 exchanges.

or the bid offer or last price derived from the CATS data).
Then the size of the order (or volume of the transaction)
may be indicated in space 16 by selecting the appropriate
nominal figures 1,000, 5,000, 10,000, 50,000 or by
5 inserting the precise volume in the box 18. Many of the
instruction choices provided by this interface (such as bid,
offer, last, ID, volume, exchange, transaction) may be entered
without keying by using a mouse as illustrated at 10 in Figure
1, which directs a cursor or indicator to the command.

10 In the illustrated embodiment the other information
may be selected, such as the appropriate exchange in area
20, the type of transaction in area 22, the buy and sell
IDs in areas 24 and 26. Other areas 28 provided by the
interface include features to provide various information
15 from the data bank as an aid to the operator.

information (including symbol, volume of shares, bid, first
and last price) in the area 30 of the display screen of the
terminal as shown in Figure 3. For purposes of trading
an index or custom basket of shares, the display will contain
5 the information with respect to the shares included in the
index or basket as illustrated. The system then executes
a dynamic data link to the spreadsheet which causes the
spreadsheet to read the list of stocks to the multiple order
trading system of the present invention. In the next step
10 the system captures the spreadsheet data and makes each stock
price and volume a variable that is inserted in a list of
preprogrammed commands. The list is then sent to the order
entry system of the stock exchange with a single key stroke.

Thus, each of the stocks and the pertinent data
15 relating thereto is entered into the multiple order entry

of shares to be traded 36, the type of transaction (buy, sell, cross, or sell short) 38, the appropriate buy ID 40 or sell ID 42, and the price (bid, offer, or last) 44. When the appropriate commands have been entered the transaction
5 may be executed by pressing the launch button 46 and all of the shares of the basket are traded almost instantaneously.

As in all cases a provision is made for the entry of a pass word 48 to provide security against unauthorized use and other functions which are commonly associated with
10 graphic user interface are provided.

Therefore, by means of the present system, a terminal or personal computer may be used to capture from a spreadsheet all the data necessary to trade in a selected list or group of shares, and by inserting this data into
15 the preprogrammed commands of the system, all of the necessary commands to execute the trade in all of the shares may be sent to the stock exchange order entry system in a single set of signals.

is stored and accessible to any terminals which are connected to the network. The information in the server is read by the spreadsheet 56 of a terminal, such as the one illustrated in Figure 1, which is designed to read and display a given
5 basket of shares with the pertinent data with respect to volumes, bid, offer, last, etc. Block 58 represents the multiple order trading system of the present invention which reads the data from the spreadsheet, including all the data on a given basket of shares, organizes the data into the
10 proper format for automated trading, and issues the multiple orders to the order entry system 60 of the central computer 50 at the stock exchange.

By having the data formatted by the multiple order launcher, the transaction of a whole basket of shares can
15 be effected quickly, easily, with fewer errors and within the time frame for which the criterion or instructions for the transaction are valid.


system may be adapted to initiate a transaction automatically when certain criterion are met, or may be designed to create a signal when the criterion are met so that a trader/operator may make the final decision or judgment to execute the transaction or not, and may then execute it substantially
5 instantaneously once the decision has been made.

Once the order entry has been received by the exchange system, the transaction is completed and the appropriate records and confirmation documents are produced
10 in the usual manner without any further activity by the trader.

It will, of course, be realized that numerous modifications and variations from the illustrated embodiments may be employed without departing from the inventive concept
15 herein.

2. A control system as claimed in claim 1 wherein said means to launch is responsive to conditions in the data read from said spreadsheet.
3. Apparatus as claimed in claim 2 wherein said means to launch said order is responsive to the commands of an operator.
4. Apparatus as claimed in claims 1, 2 and 3 wherein said means to read, means to formulate, and means to launch are operated by means of a graphic user interface with display means and a mouse adapted to communicate to selected controls on the graphic user interface display.
5. A system as claimed in claim 4 in which said graphic user interface displays commands which include share symbols, price selections, order size, and transaction type.

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Symbo  Log In

Exchange

☒ TSE ☐ NYSE ☐ MSE ☐ VSE ☐ NASDAQ


20 Transaction Type

Buy Shell Cross

22 Change Options


CFO # CXL # Re-Call

Market Quote (via CATS)

 Pg UP

Common Keys

Prev. Trade Outs. Orders Order Log

 Pg Dwn

News Quote Screen

28

FIG. 2 A.

2/7

SUBSTITUTE SHEET

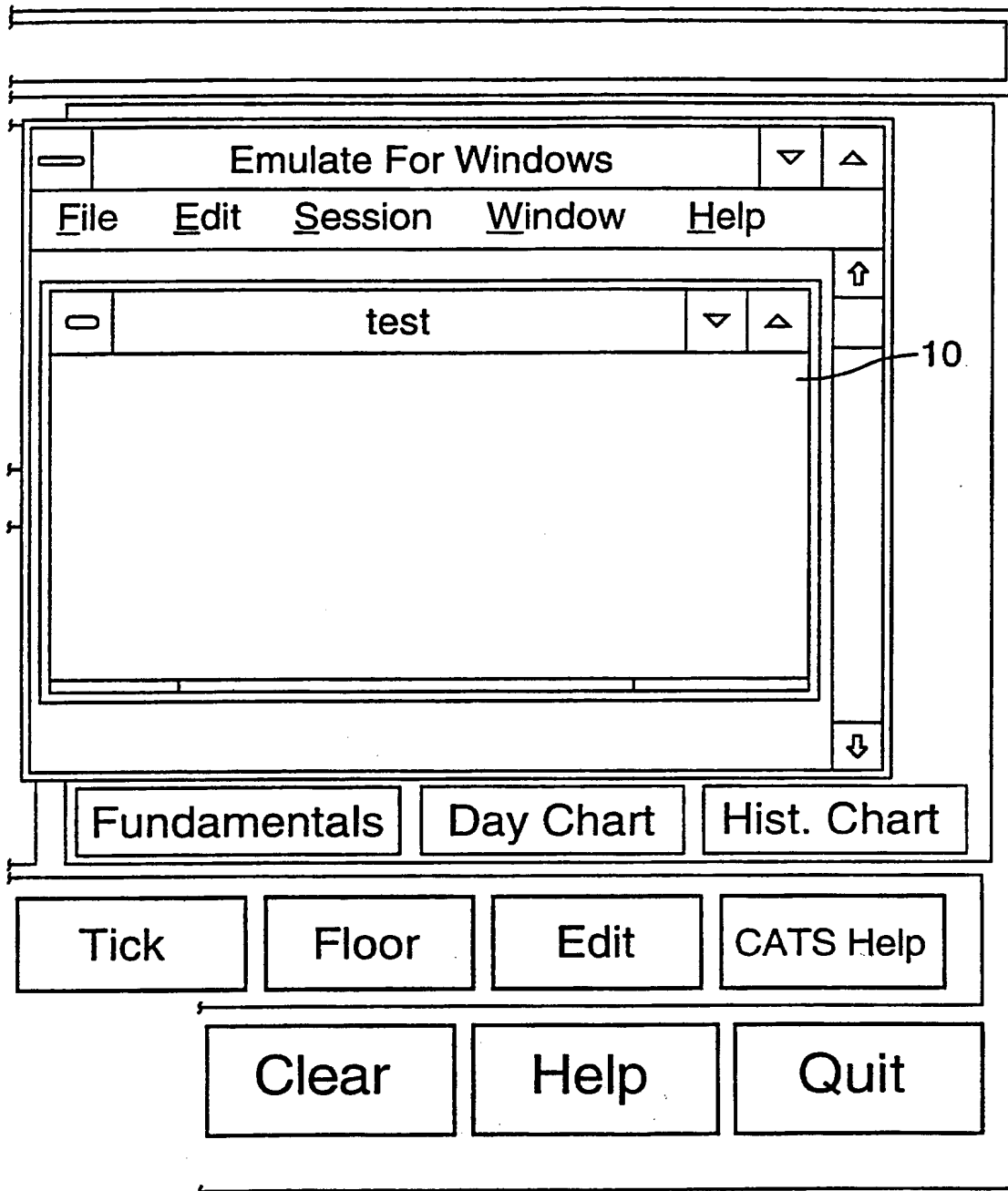


FIG.2C.

Microsoft Excel-35EXE.XLS										
File Edit View Insert Format Tools Data Window Help										
MS Sans Serif 10 B / U \$ % , - . 100% ?										
B9										
A	B	C	D	E	F	G	H	I		
4										
5		INDEX	220.293597	221.643484		221.01182	223.592281	DOWN		
6	SYM	Bid Size	Bid	Ask	Ask Size	LAST	Yesterday			
7	AL	1500	31	31.125	151	31.125	32			
8	AGT	1000	17.125	17.25	475	17.125	17.25			
9	BBD.B	1000	20	20.125	198	20.125	20.25			
10	B	2000	48.625	48.75	646	48.625	48.875			
11	BNS	1000	30.75	30.875	464	30.75	31.375			
12	BMO	1400	29.125	29.25	282	29.25	29.5			
13	OM	1500	34.375	34.625	110	34.375	34.75			
14	OXY	700	27.75	27.875	64	27.875	28			
15	OP	2000	22.875	23	174	22.875	23.5			
16	CTRA	2000	12.375	12.5	171	12.375	12.875			
17	EOO	1000	17	17.25	115	17	17.375			
18	IMO	500	46.375	46.625	93	46.5	47			
19	IMS	1000	39.625	39.75	46	39.625	40.125			
20	LAC	1500	11.375	11.5	902	11.375	11.5			
21	LDM.B	1500	8.5	8.625	5	8.625	8.875			
22	MB	1000	23	23.125	9	23	23.375			
23	MCL	1000	25.625	25.75	22	25.625	25.25			
24	MHP	1000	16.125	16.25	883	16.125	16.25			

30

FIG. 3B.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/CA 95/00123

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 G06F17/60

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP,A,0 401 203 (MJT HOLDINGS INC) 5 December 1990 see the whole document ---	1-5
X	EP,A,0 453 150 (COMMODITY EXCHANGE INC) 23 October 1991 see the whole document ---	1-5
X	WO,A,91 14231 (CHICAGO TRADE BOARD) 19 September 1991 see the whole document -----	1-5

☐ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

* Special categories of cited documents :

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- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- * & * document member of the same patent family

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